DRAFT Outline
Water Sector Adaptation to Climate Change Impacts
California Climate Adaptation Strategy Update 2012
July 18, 2012

I. Water Sector Vulnerability to Climate Change

- Changes in hydrology affecting frequency, magnitude, and duration of extreme events (flooding and drought) affecting water quantity, quality, and infrastructure
- Reduction in snowpack storage affecting water supply reliability and hydropower
- Rising sea levels affecting coastal flooding and Delta integrity and water quality
- Changes in water quality of streams, lakes, and the ocean affecting ecosystems and public health

II. Current Actions to Adapt to Climate Change in the Water Sector

- 2009 water legislation package, including SB X7-7 ("20x2020")
- 2009 State Water Resources Control Board (SWRCB) recycled water policy and 2011/2012 California Public Utilities Commission (CPUC) proceeding on recycled water
- Climate change requirement in Integrated Regional Water Management (IRWM) grant program
- *Climate Change Handbook for Regional Water Planning* and regional climate change specialists in DWR Regional Offices to work with local water planners
- Climate change adaptation in the *California Water Plan Update 2009*
- Reconvening of DWR's Climate Change Technical Advisory Group
- National Research Council sea level rise study
- Paleohydrology studies of the San Joaquin, Sacramento, and Klamath River basins
- Public Interest Energy Research (PIER) Vulnerability and Adaptation Studies

III. Priority Climate Change Adaptation Strategies Going Forward

- Implement a 21st century Western observing and forecasting system for extreme precipitation, to support flood management and transportation operations
- Avoid placing new infrastructure in harm's way, and assess the vulnerability of existing infrastructure to extreme events
    - Incorporate flood bypasses, easements, and setback levees into regional flood management, to address the future uncertainty of flood flows
    - Utilize low impact development and other methods in state and regional stormwater permits to restore the natural hydrograph
    - Supplement the federal Guidelines for Determining Flood Frequency Analysis to support local and regional flood planning
    - Include climate change in flood hazard mapping and otherwise quantify the climate change hazard in State flood planning
    - Enhance emergency response and recovery capabilities at all levels
    - Direct public funding for water infrastructure away from vulnerable areas
- Practice Integrated Resource Planning across sectors
    - Improve water supply reliability and quality for agricultural and urban demand and environmental needs through the IRWM process
    - Conduct vulnerability assessments as part of IRWM planning

    - Coordinate IRWM planning with other community and land use planning processes, including transportation blueprints, local general plans, and sustainable communities planning (SB 375)
    - Encourage water conservation beyond 20x2020
    - Address public health impacts of water and climate change on vulnerable populations
- Incorporate climate change into SWRCB processes, including:
    - Water rights issues, such as instream flows, stormwater and flood water capture and use, and groundwater protection and use;
    - SWRCB Ocean Plan;
    - 401 certification considerations for Federal Energy Regulatory Commission dam re-licenses and US Army Corps of Engineer wetland permits;
    - Risk assessments in grants and loans for water quality infrastructure; and
    - Monitoring and data collection, basin plans, and water quality permits and policies
- Manage Sacramento-San Joaquin Delta climate change vulnerability by implementing:
    - Water quality and water rights measures in the San Francisco Bay/Sacramento River and San Joaquin River Delta and its tributaries;
    - Delta Stewardship Council Plan; and
    - Bay Delta Conservation Plan
- Promote environmental stewardship and biodiversity and forestry adaptation by integrating ecosystem connectivity into water management projects
- Implement a statewide, multi agency groundwater strategy that emphasizes regional groundwater management and quality and statewide accountability

IV. Related Planning, Investment, and Regulatory Processes

- California Water Plan Update and Water Quality Control Plans (Basin Plans)
- Delta Plan, Bay-Delta Conservation Plan, and SWRCB Delta regulatory processes
- Wildlife Action Plan and Fire and Resource Assessment Program
- Environmental Goals and Policy Report
- Integrated Energy Policy Report and AB 32 Scoping Plan Update
- Water resources investment fund and/or future water bond; State Revolving Funds

V. Climate Change Adaptation Research Needs in the Water Sector

Existing SWRCB and DWR research needs summaries as appendices